LIBRARY
NOV 1920

The JOURNAL of GEOGRAPHY

A MAGAZINE FOR TEACHERS

VOLUME XIX NUMBER

OCTOBER, 1920

IN THIS ISSUE

A PROPOSAL FOR RENAMING THE SOLAR CIRCLES
ZONIA BABER

HOW SHALL WE TEACH GEOGRAPHY?
HARLEY GOSS THOMAS

THE RIVALRY BETWEEN SUGAR BEETS AND SUGAR CANE
ELLSWORTH HUNTINGTON

A CRITICISM OF THE PRESENTATION OF AN INDUSTRY IN THE PRESENT TYPE OF GEOGRAPHY TEXTBOOK
W. B. McCONNELL

CHANGES IN THE RUBBER WORLD
W. O. BLANCHARD

GEOGRAPHY IN THE SECONDARY SCHOOLS
JAMES F. CHAMBERLAIN

THE JOURNAL OF GEOGRAPHY

A MAGAZINE FOR TEACHERS

Editor

GEORGE J. MILLER

State Normal School, Mankato, Minn.

Associate Editors

R. H. Whitbeck, University of Wisconsin, Madison

James F. Chamberlain, Extension Division, University of California, Pasadena, California

R. M. Brown, Rhode Island College of Education, Providence

A. E. Parkins, George Peabody College for Teachers, Nashville, Tennessee

Business Manager

GEORG THORNE-THOMSEN

SUBSCRIPTION TERMS

The *Journal of Geography* is published monthly except June, July, and August.

The subscription price is $2.00 a year, payable in advance; the price of single copies is 25 cents. Orders for less than a half year will be charged at single-copy rate.

Postage is prepaid by the publishers on all orders from the United States, Mexico, Cuba, Porto Rico, Panama Canal Zone, Republic of Panama, Hawaiian Islands, Philippine Islands, Guam, Samoan Islands, Shanghai.

Postage is charged extra as follows: For Canada, 30 cents on annual subscriptions (total $2.30), on single copies 3 cents (total 28 cents); for all other countries in the Postal Union, 52 cents on annual subscriptions (total $2.52), on single copies 6 cents (total 31 cents).

The *Journal* is the official organ of the National Council of Geography Teachers and is sent to all members of the organization. The annual dues, $1.50, are payable to the *Business Manager*. Extra postage rates for copies sent to foreign countries should be added to the membership dues.

Patrons are requested to make all remittances payable to the *Business Manager*, in postal or express money orders or bank drafts.

It is assumed that members and subscribers wish to continue receiving the *Journal*. However, remittances must be sent promptly to assure your volume being complete.

Published monthly except June, July, and August

BY

A. J. NYSTROM AND COMPANY

PUBLICATION OFFICE, 450 AHNAIP STREET, MENASHA, WIS.

GENERAL OFFICES, 2310 CALUMET AVENUE, CHICAGO, ILLINOIS

Application has been made for entry as second-class matter at the postoffice at Menasha, Wis.

The JOURNAL of GEOGRAPHY

VOLUME XIX OCTOBER, 1920 NUMBER 7

A PROPOSAL FOR RENAMING THE SOLAR CIRCLES

ZONIA BABER

School of Education, University of Chicago

The complexity of physical, social and political ideas of to-day is taxing the human intellect almost to the breaking point. For this reason it is well to take an inventory at this time of our intellectual stores to ascertain what is of value and what should be discarded.

Inherited mistakes, when recognized, are difficult to correct owing to our mental slothfulness. English orthography is a classic example. But there are many other inherited, useless, mental burdens which we should be ashamed to pass on to the next generation.

Geography bears its share of this rubbish. Those who believe in the educative value of geography should aid in clearing the subject of this valueless material. The tropics offer a good place to begin house cleaning. For some reason the terms, Tropic of Cancer and Tropic of Capricorn, are easily confused even by the adult mind. This confusion may result from the fact that both words begin with "Ca." But whatever the cause, even teachers and college students find difficulty in distinguishing between them. From 90% to 100% of college students, in eight different classes, recently questioned, expressed difficulty in remembering which was the Tropic of Cancer and which the Tropic of Capricorn.

Several thousand years ago observing people discovered that the sun came a certain distance north, appeared to stand for a time, then turned and went south. The turning place or tropic was then in the part of the heavens where the constellation of Cancer was seen. Six months later when the sun reached the south turning point it was in the region of the constellation of Capricorn.

Owing to the precession of the equinoxes, the solstices have not occurred in the "House of Cancer" and in the "House of Capricorn" for nearly 2000 years and will not occur there again for about 23,000 years. At the present time the summer solstice occurs in Gemini

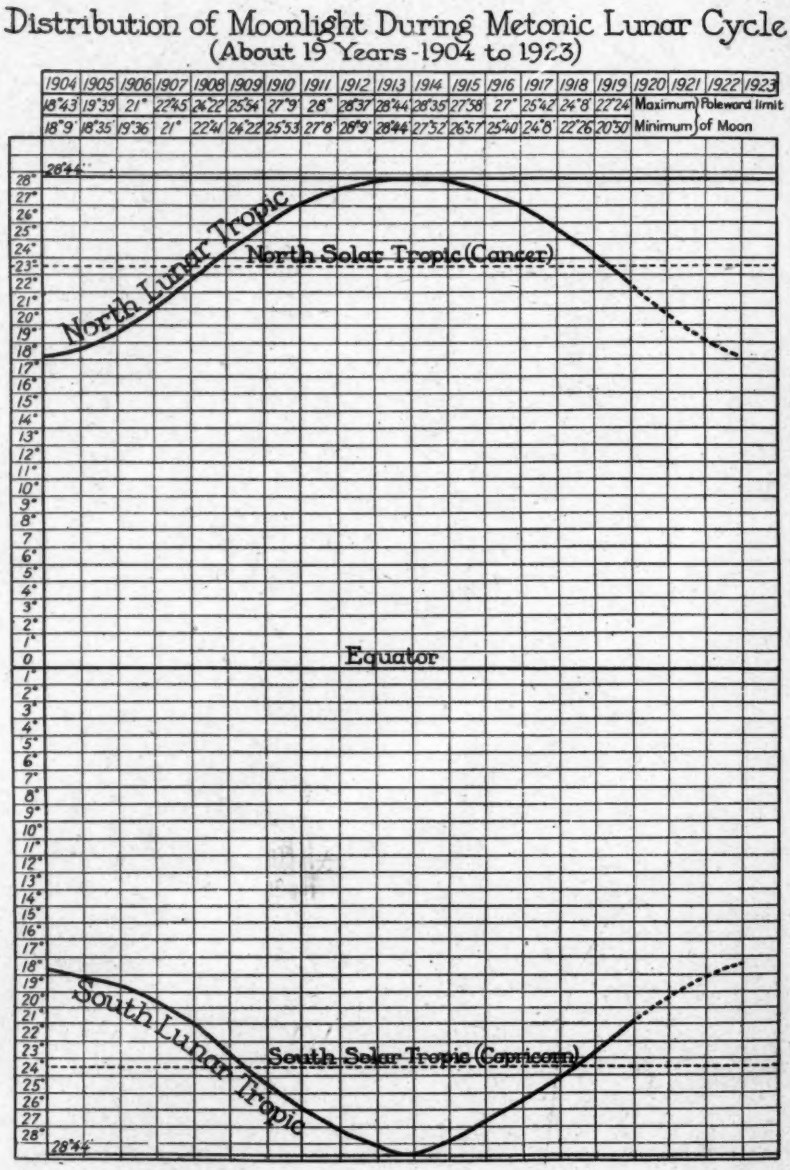


FIG. 1. DISTRIBUTION OF MOONLIGHT DURING METONIC LUNAR CYCLE

FIG. 2. MAP OF WORLD SHOWING THE MIGRATION BELTS OF THE LUNAR CIRCLES

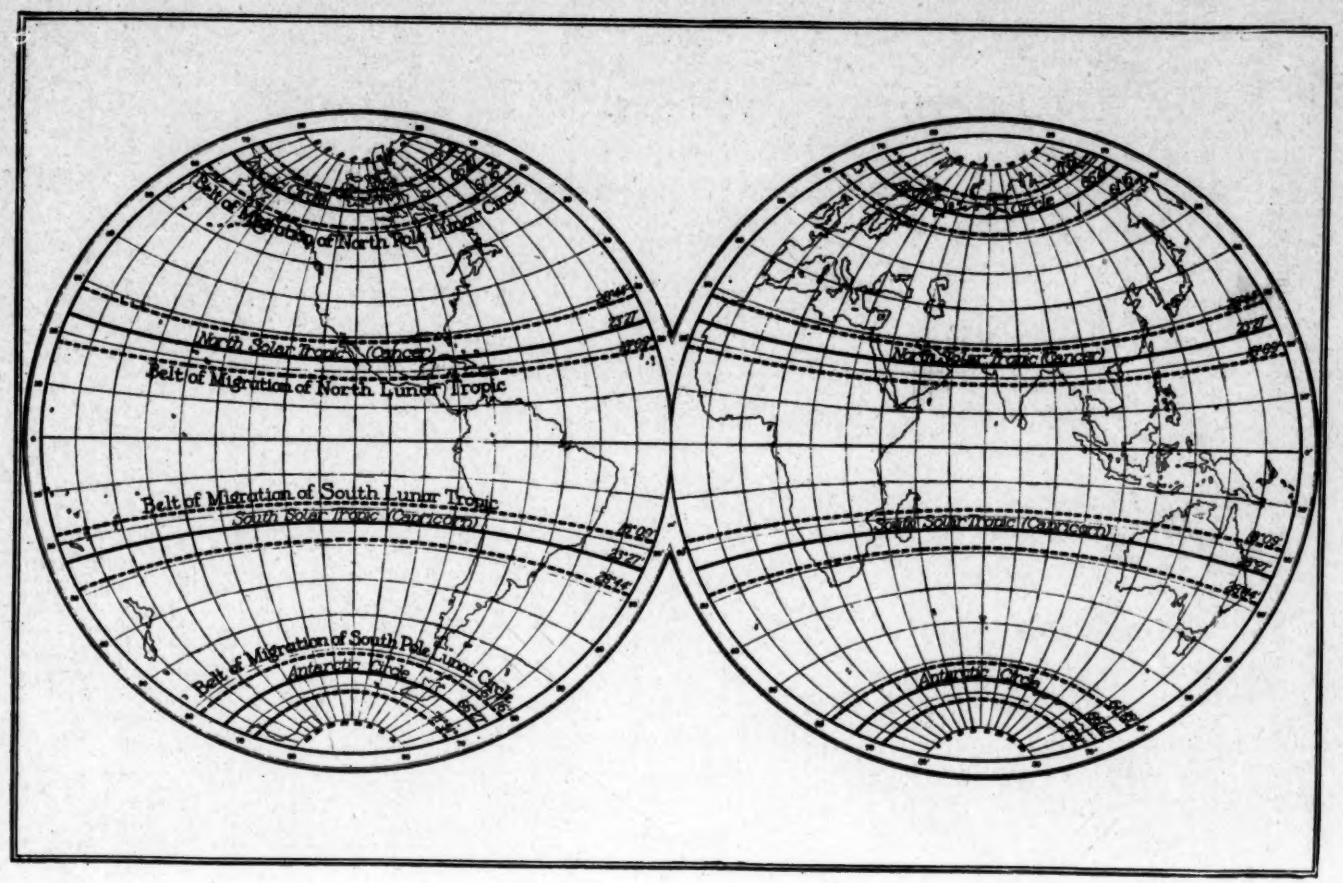

Belt of Migration of North Polar Lunar Circle
North Solar Tropic (Cancer)
Belt of Migration of North Lunar Tropic
Belt of Migration of South Lunar Tropic
South Solar Tropic (Capricorn)
Belt of Migration of South Polar Lunar Circle
Antarctic Circle
North Solar Tropic (Cancer)
South Solar Tropic (Capricorn)
Antarctic Circle

FIG. 2. MAP OF WORLD SHOWING THE MIGRATION BELTS OF THE LUNAR CIRCLES

and the winter solstice in Sagittarius. It is burdensome and useless to try to relate the tropics to the constellations. Memory is often made to pay too dearly for devotion to history! The names borne by the sun's tropics should be terms that are appropriate for all time, and that are free from any thing that may lead to confusion. The designation, North Solar Tropic and South Solar Tropic, fulfills these conditions.

The Arctic and Antarctic Circles are also confusing to the learner, as the names do not indicate which one is north and which one south. North and South Pole Solar Circles would be more appropriate. Perhaps the continued use of the terms Arctic and Antarctic can be justified because the former is associated with the Arctic Ocean and the latter with the Antarctic Continent. It is clear, however, that these terms bear no relation to the reason for the existence of such Circles and hence are not scientifically sound.

This suggestion for renaming the solar circles is the outgrowth of meeting again and again what seems to be an easily avoidable confusion in getting a firm grasp of the fundamentals of the dominant geographic control—the distribution of light and heat.

To ascertain the distribution of moonlight over the earth it was necessary to plot the lunar tropics. The difficulty in delineating these lines lay in the fact that the moon does not turn on the same north and south parallels as it makes its journey twice a month across the lunar "Torrid Zone." During the Metonic cycle, of about 19 years, the moon's turning points vary from latitude 18°9′ north and south, to latitude 28°44′ north and south. (Fig. 1.) In the year 1904 of the present lunar cycle, the moon turned at latitude 18°9′ north and south making a zone that saw the moon in the zenith of about 36°18′. This zone increased in width from 1904 until 1913 when it reached a breadth of 57°28′. After reaching the greatest extension of the moon's vertical rays, the lunar tropics moved equator-ward. This movement will continue until about 1923 when the pole-ward movement will again begin. At the present time (Oct. 1920) the moon is not seen in the zenith north of latitude +19°29′ nor south of latitude −19°21′.

As soon as the moon's tropics were drawn (Fig. 1) it was apparent that they would have to be christened. I suggested the names, North Lunar Tropic and South Lunar Tropic to Professor Forest Ray Moulton for his criticism and received his cordial approval.

The migration of the North Lunar Tropic and of the South Lunar Tropic, each passing over a belt of about 10½° of latitude, is shown on a map of the world (Fig. 2).

The North Pole Lunar Circle and the South Pole Lunar Circle move over zones of similar breadth. In 1904 the polar areas that had the moon above the horizon for twenty-four, or more hours, were bounded by latitude 71°51′ north and south. And in 1913 latitudes 61°16′ north and south had moonlight for twenty-four continuous hours.

The use of the adjectives, north and south, to designate the solar and lunar tropics and the polar circles has been discussed with many university classes of teachers and has received unanimous approval. Unless more appropriate names are found, it is hoped, for the sake of present and future students, that these terms may be accepted.

HOW SHALL WE TEACH GEOGRAPHY?

HELEN GOSS THOMAS
Boston, Mass.

The old-fashioned, empirical methods of teaching geography have been cast aside like a worn-out garment, and the new methods, taken collectively, may be likened to a cloak of many colors. Indeed, they may truly be said to be a distinct patchwork; some of the patches having been cut from old cloth, and others attaining to the dignity of really new material. The net result of the cutting and patching, imperfect as it appears, has a distinctly encouraging aspect in that it inspires hope for better geography teaching in the future.

That we must have better geography in our American schools is now an accepted fact. For a decade before the war educators in different parts of the country were stirring uneasily over the ever-growing conviction that something was wrong with geography teaching. In four short years that feeling crystallized and emerged into the light of general public consciousness. It is not strange, then, that a wave of reform has set in. When the people begin to demand a change, transformation is bound to occur.

THE PROBLEM OF THE GEOGRAPHY TEACHER

The past two years have witnessed more popular discussion of geography in newspapers and periodicals than had appeared in the twenty foregoing years. Inevitably, teachers have responded to the popular demand, and have struggled heroically to infuse light and interest into a subject which had been taught for years, with a few rare exceptions, in an exceptionally dull, hum-drum way. For the rank and file of teachers, for whom geography is but one of a dozen subjects that must be taught with clock-like regularity, the task is a heavy one. Faced with an enormous mass of geographic information which increases every year, and a limited amount of time in which to teach it—which does not increase with every year—the problem reduces itself almost to mathematical dimensions. It is little wonder that the teaching world cries almost in despair, "What shall we teach and how shall we teach it?"

There are, clearly, two distinct phases of the problem of geography teaching in the public schools today. First comes the selection of material, and second, its method of presentation. In most common

schools the course in geography covers only four years at the outside, affecting broadly the school children between the ages of eight and twelve years. It is obvious that to try to teach exhaustively all the facts of geography in four years to immature children is futile in the extreme. Careful selection of subject matter, then, becomes of paramount importance. Furthermore, to attempt to teach the disconnected details of an enormously broad subject, without weaving them into a logical progression of thought with a definite end in view, is worse than futile—it is simply befogging. In other words, a clearly distinguishable thread must be found on which to string the beads of knowledge in orderly succession.

These observations are neither original nor new. They have been recognized for years by the teaching profession. In spite of everything, however, textbooks of geography have continued to wax fat and redundant with an excess of geographic facts, resembling in an ever-increasing degree gazeteers, compendia, and statistical reports rather than rational courses of study. The crying need of modern geography teaching is quality, not quantity. The actual number of facts to be learned must be decreased and the educational value of the remainder must be increased. Only in this way can the four precious years available for the subject justify their existence.

Human Geography

With a common end in view—the improvement of geography teaching—different schools of geographers have attempted reform. One has based its system on physical geography, emphasizing the physical growth of the earth's surface. Another has centered on the industrial phase of the subject, having for its fundamental theme where, how, and why the useful things of the world are produced. Still another stresses the commercial aspect of geography, turning the world into one huge market-place. In all of these schemes *things*, not *people*, have played the leading rôle. The latest development has been human geography, in which people supersede things in order of importance, and the inanimate features of the earth are treated in the light of their relation to the animate. We may congratulate ourselves that at last a step has been taken in the right direction. After all, what is geography? Simply the study of the response of life to the natural physical environment. People, then, are the central feature in geography, just as they are in history. There is no more justification in making hills or valleys or wheat or coal the central figures of geography than there is for making laws or papal bulls or battles the

prime subjects of history. All these *things* are pertinent to the two subjects respectively, but only in so far as men have made, modified, used, or misused them, in other words, as they affect the growth and progress of mankind.

SELECTION OF SUBJECT MATTER

With human geography as our main premise we have a solid, rational starting point for the teaching of geography. Now comes the problem of selecting from the overpowering mass of available data those geographic facts which will contribute most effectively to a child's knowledge of the influence of geographic environment on man. Our paramount object should be to give to our children a real understanding of what the people of the different parts of the world are doing and why they are doing it. This is purely a matter of the logical relation of cause and effect, and will serve as the safest possible criterion for the selection of subject matter. We must seek a careful correlation of all the important facts of geography, physical, industrial, and commercial, never for a moment losing sight of the fact that human geography is the ultimate end and aim of all. For example, the big, broad principles of climate must be taught in their relation to its effect on the needs of man and their satisfaction, but a grammar school child should never be called upon to study the abstract details of climatology as a subject in itself. Again, some knowledge of the physical features of the earth's surface is necessary if children are to understand the relation of habitat to life, but there is no need for plunging young students into the scientific study of topography as such. Intelligent selection of subject matter demands the discarding of all abstract scientific details and the stressing of the major facts of geography which have a direct and unquestionable effect on the life and habits of people.

REGIONAL GEOGRAPHY

Even after the subject material has been sorted and sifted and the facts to be taught determined upon, the problem is but half solved. The mass of detail is still too great to be absorbed by the pupil unless it is presented in an orderly and comprehensible fashion. In the past the solution which has been almost universally accepted has been that of presentation by political units. This method, while possessing many good features, offers one very serious pitfall. It leads almost inevitably to the old "drill" form of recitation which can be so satis-

factorily arrayed in outline form. It runs something like this: FRANCE: (1) Boundaries, (2) Area, (3) Surface, (4) Drainage, (5) Cities, (6) Industries, (7) Exports and imports, and so on. Such a method is bound to more or less paralyze a child's mind, tempting him to learn by rote the facts about each country, and failing utterly to make him *think*. It is necessary, therefore, to devise some plan for vitalizing the facts that are to be learned. The pupil must be taught not only the *what*, but the *why*.

For many years European geographers have been basing the teaching of their subject on what they have called, very happily, *regional geography*. For some reason this method, undoubtedly the best ever developed, has been slow in penetrating the western world. The time has come, however, when its virtue and value are coming into recognition in the United States. The basic idea is so simple and so eminently rational that it seems strange that its general acceptance has progressed so slowly, especially since it does not require the discarding of the old plan of study by political units, but puts that study on a foundation which at once clarifies and vivifies it.

Regional geography is based upon the division of the continents into natural regions. A natural region is an area within which the geographic conditions (primarily topography and climate) are broadly similar, giving rise, perforce, to certain occupations and habits of life among the people. Once the regional conditions are known to and understood by a child he can reason out for himself what the life of the people is likely to be. Progressively, he will soon learn to reason by analogy; he finds that a given set of geographic conditions in one part of the earth leads to a certain type of life among the people, and when he encounters the same or similar conditions in another region he looks for the same general type of life. If he finds a difference in the type of life his natural curiosity prompts him to ask why, and thus his scientific interest is aroused. Regional geography, therefore, has two distinct pedagogical advantages: it teaches the youthful mind to reason logically, and it piques a child's innate curiosity which is always a sign of healthy mental development.

Advantages of Regional Geography

Regional geography is, then, the safest and strongest thread upon which to link up, one after another, the details of geography which the study of the subject involves. First of all, with the help of maps, pictures, and descriptions, the teacher may paint a picture of the continent under discussion, bringing out the major physiographic condi-

tions of the different natural regions and showing their influence on the people. When the children have visualized the continent in this way they are ready for the study of each country in detail, and this is the point at which the regional treatment demonstrates most forcibly its strength and its value. For now, instead of learning arbitrarily that the people in the eastern part of the country do one thing for a living, and those of the western part do something else, and those of the northern part engage in some other activity, the children see almost at a glance to what extent the country under consideration partakes of the conditions of the different regions which they have studied, and are able to interpret those regional variations in terms of human life. The difficulties and stupidity of memorization are done away with, simply because the *why* has preceded the *what*, and a knowledge of the cause renders easy the learning of the facts of the effect.

Almost without exception, teachers who have tried the regional treatment of geography are enthusiastic over its possibilities. It lends itself admirably to the problem and project methods of teaching, both of which have been proved beyond question to be thoroughly sound. Its use will put new life into geography at a time when, if ever, geography ought to be thoroughly rejuvenated and re-vitalized. To a large extent in the next few generations the place of the United States in the world will be determined by the breadth of grasp which its citizens will have of the life and affairs of other nations. To such a grasp a sound knowledge of human geography is absolutely essential. The sooner we bring our geography teaching up to the highest standard of excellence, the better.

THE RIVALRY BETWEEN SUGAR BEETS AND SUGAR CANE[1]

By ELLSWORTH HUNTINGTON and SUMNER W. CUSHING

A few centuries ago people satisfied their need for sugar by occasionally eating honey, by drinking the sap of such trees as the maple and palm, or by chewing a stick of sugar cane. Now all civilized people use pure sugar and plenty of it three times a day in various food and drinks. Hence, it pays for hundreds of thousands of farmers to raise plants just for the sugar they contain. Sugar beets and sugar maples are raised in cold regions, sugar cane in warm regions, and sorghum cane in intermediate regions. By far the most important of these are sugar cane and sugar beets. Only those who use sugar in preserving fruits, or making candy can tell the difference between the sugar made from beets and that made from cane.

A sugar cane looks like a corn stalk without the ears. It grows differently, however, for many canes spring from one root, and when they are cut new shoots begin to sprout from the old root. A sorghum cane also looks somewhat like a corn stalk and grows in the same way. The sugar beet looks like a rutabaga turnip in color, size, and shape. It has been carefully developed for nearly a century by selecting year after year the seeds of those beets that are sweetest. Eighty years ago it took eighteen pounds of beets to yield one pound of sugar, while now only six pounds are needed.

The United States extends so far from north to south that all four sugar plants are grown within its limits—maple, beets, sorghum, and cane. The accompanying map shows where the three most important grow. Notice that the sugar beet is grown in the cool northern states, the cool plateau states of the west and the cool Pacific coast, while sugar cane is confined to the warm southern states. Sorghum does well in the cooler parts of the southern states, between the beet and the cane. The delicious maple sugar is taken from trees in our northernmost states from Indiana eastward and in southern Canada.

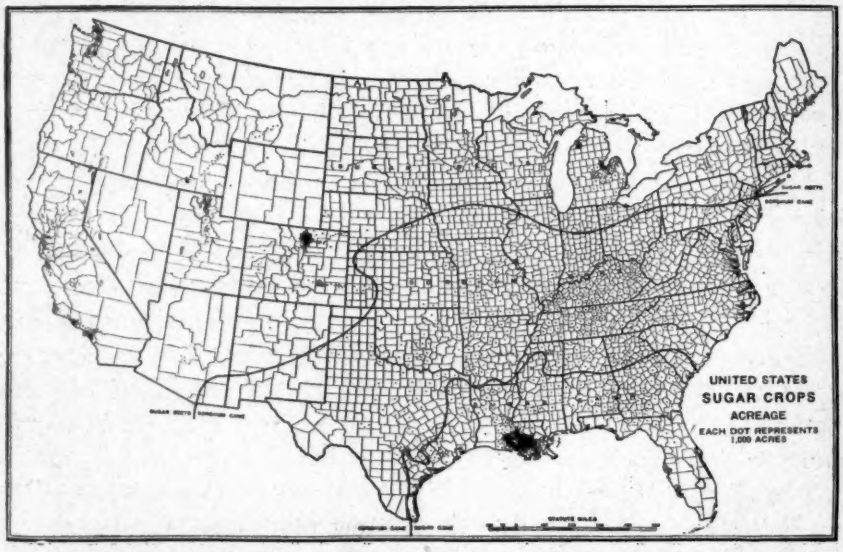
SUGAR BEETS

Sugar beets could be grown much more extensively in the United States but they are crowded out by more profitable crops such as

[1] This is a chapter from a "Commercial and Industrial Geography" for junior high schools, to be published shortly by the World Book Company.—Editor.

cereals. They are not adapted to American methods of agriculture because they require much hand labor. No machines have as yet been invented for weeding the young plants and thinning them out. Women and children usually do this tiresome work, for it must be done cheaply or not at all.

Because the better soil is used for more profitable crops beets are often crowded on to sandy soil where little else will grow. This is the reason eastern Michigan is so prominent in the beet industry. But the best place for beets, as appears on the map, is in the irrigated lands of the dry West where the cool, but sunny weather of the long autumn causes the beets to grow large and sugary. This is why Colorado, California, Utah, and Idaho, are important producers of beet sugar.



DISTRIBUTION OF ACREAGE OF SUGAR CROPS IN THE UNITED STATES.—From Finch and Baker. Geography of the World's Agriculture.

In these states throughout the winter months large factories receive a constant stream of wagons and trains, bearing the best of the beet crop. There they are washed, sliced, and soaked in hot water to take out the juice. The juice is partly purified with lime and acid, and then filtered. Next it is heated until the water evaporates leaving the sugar as damp brownish crystals. These are purified, whitened, and broken into the granulated table sugar we know so well.

SUGAR BEETS OUTSIDE OF THE UNITED STATES

The cool climate with moderate summer rainfall and dry sunny autumns in which sugar beets thrive is found throughout northern

Europe from northern France to central Russia. Beets are an especially important crop in central Germany and Bohemia. This is partly because farm labor is cheap and partly because the population is so dense that there is not room for pasturage and the people find it profitable to feed their cattle with the pulp that is left after the sugar has been extracted from the beets. Moreover, there is a large market for sugar close at hand, and the great sugar cane regions are far away.

No wonder the summer traveller in northern Europe long remembers the great expanses of beet fields, and the peasant women and children on their knees pulling the weeds that would smother the young plants.

SUGAR CANE

Happy are the boys and girls who live on a sugar cane plantation! Nature's stick of candy, a piece of sugar cane, can be had at any time for the cutting. Moreover, it can be chewed and sucked much longer than an ordinary stick of candy, and will still taste delightfully sweet. The boys and girls who would enjoy this happy experience must betake themselves to warm regions.

The coolest places where the sugar cane grows are our southern states, from eastern Texas to South Carolina as appears on the map, but the frosts kill it each winter. This difficulty is overcome by planting new canes every year after the last frost of the winter and harvesting them before the first frost of the next winter. To follow this method successfully requires at least eight months without frost. Nearer to the equator in such places as the great sugar cane islands of the West Indies, Java, Hawaii, and Mauritius, the cane is allowed to grow from three to ten years before new plantings are made and a heavy crop is cut from the plantation every year.

In these islands and in sugar cane regions of lesser importance, such as India, Egypt, Brazil, Northern Argentina, and the Philippines, high uniform temperature prevails and the rainfall is abundant. Under these conditions the cane seems to draw a flood of sweetness from the sun and out of the fertile soil. Sometimes as much as eight tons of sugar are made from the cane cut annually from one acre of land.

In Cuba, where cane sugar is king, the plantations are of great extent and the methods of cultivation and harvesting are very progressive. Often a plantation covers several thousand acres. Gang plows are sometimes used to prepare the soil. As soon as the cane cuttings are set out they quickly give off sprouts. Cultivators drawn by horses are used to keep down the weeds. When the cane stalks

reach a height of from 6 to 12 feet, men with long heavy knives pass through the rows and strike down the ripe canes at a single blow. The crop of enormous weight is carried to the factory by means of many miles of light moveable railways made in short sections about 8 or 10 feet long. As soon as one part of the plantation is harvested the railway is quickly taken up and put down again elsewhere. In the factory the juice is crushed out of the cane by rollers, and is then heated in huge boilers which thicken the syrup and crystallize the sugar. When sugar is first crystallized it is brown. In this form it is sent to American coast cities, Boston, New York, Philadelphia, Baltimore, New Orleans, San Francisco, where it is refined not only to tickle our palates, but to please our eyes by its whiteness.

SORGHUM CANE

Sorghum is often called Chinese sugar cane because it resembles sugar cane and has long been grown in China. We hear little about it in this country unless we happen to live in the sorghum cane belt shown on the map. The reason is that it is grown merely to satisfy local needs. Most of it is made into molasses which is eaten on corn mush or corn pone. Sorghum is hardier than sugar cane and requires only five and one-half months without frost. It is not so profitable as sugar cane, but its molasses or sugar is more easily extracted than in the case of sugar beets.

QUESTIONS, EXERCISES AND PROBLEMS

I. **To find out what kind of sugar is best produced in various parts of the United States.**

A. From the map name the eight leading sugar beet states of the United States. In which of these are the beets raised by irrigation?

What special advantages have these states?

What special advantage have the states bordering the Great Lakes?

B. Name from west to east the states that grow the American cane crop.

Cane seems to grow best in the low flood plains and deltas of rivers, not far from the salt water. What relation has this to the state that raises the most cane sugar? Why can Cuba grow cane cheaper than Louisiana?

C. What section of the country, and especially what four states, grow sorghum? Why do we not hear of it in other sections?

II. **The annual consumption of sugar in the United States is about 85 pounds per person.** This country has ample land, good soil and the proper climate for raising beets and cane in sufficient quantity to yield all the sugar we need.

A. Why then should the domestic supply of sugar raised by our whole country be only a fourth of our total consumption, while the little islands of Porto Rico and Hawaii supply an equal amount? Why should Cuba supply nearly half of what we import from foreign countries? Cuban sugar pays a duty 20% less than that paid by other foreign sugar. What effect does this have on sugar farmers in Cuba compared with those of Porto Rico, Hawaii and Germany?

III. **To find out how various regions are affected by the demand for sugar.**

A. In 1836 it took 18 pounds of beets to make one pound of sugar; in 1882 it took ten pounds; and now, about six. How do you suppose farmers have so much increased the sweetness of the beets? Where has this been done to the greatest extent?

B. Today the sugar consumption of the United States is ten times as great as it was a century ago. Account for this increased supply in two ways besides the one just given.

IV. **How the United States ekes out its sugar crops.**

The demand for sugar is so great and has been increased so much by prohibition that cane and beets do not furnish all that is needed.

A. Each year we use 45 million pounds of sugar extracted from grapes. What effect did the prohibition amendment have upon the production of this sugar? In what states was this most important?

B. Glucose, a by-product of corn, which was formerly wasted, furnishes the country with about 170,000,000 pounds of sweetness a year. Most of this variety of sugar is consumed by the bakeries and candy makers because it is relatively cheap. In what four states would you expect to find many glucose factories, judging by the production of corn?

C. Our country's yield of honey could be increased about ten times if bee-keeping were to become more general. The flowers of alfalfa, buckwheat, and cotton furnish excellent food for bees. Name three states where much honey might be produced with the aid of each of these.

V. **How war affects sugar.**

Napoleon is responsible for the development of the beet sugar industry. Because England's blockade had cut off his cane sugar supply, he offered a prize to the man who would make it practicable to supply his army with sugar from beets.

A. Did the English blockade of the German ports in the Great War cause a similar dearth of sugar in Germany? Explain.

B. England was not blockaded, yet it suffered for lack of sugar. What former supplies was it unable to secure? Why?

C. What connection was there between England's inability to secure sugar from its regular source and our sugar shortage?

D. Beet sugar is a crop which yields quick returns and consequently aids greatly in increasing a country's wealth. Explain why the recuperating European nations are raising sugar beets.

A CRITICISM OF THE PRESENTATION OF AN INDUSTRY IN THE PRESENT TYPE OF GEOGRAPHY TEXTBOOK, WITH SPECIAL REFERENCE TO THE COTTON INDUSTRY[1]

W. R. McCONNELL
Teachers College, Miami University, Oxford, Ohio

As a rule courses of study outlining the work in geography for the elementary schools lay considerable emphasis upon the teaching of great industries such as the cotton, or the lumber, or the wheat industry. This is a rational procedure for the occupations of a people are, in a large measure, the reflection of their geographic environment. The study of geography should reveal forces, influences, and relations, as conditions determining human differentiations and activities. Any proper interpretation of the industries of a people in any given region must, then, lead to a careful study of the environmental factors that influence or control such activities. The industry thus becomes a motive for giving a vision of mankind working in places and with forces that are seen as human opportunities, conditions, stimulations, or limitations.

For the geography work in our elementary schools, it is very common to find that a single textbook constitutes the only available source of information to which the pupils have access in the preparation of lessons. From this one text they study the portion of it assigned them for the recitation or use what material it contains to answer questions or solve problems set by the more conscientious teacher. It is still possible to find courses of study that designate a certain number of pages of a given textbook for each month's work. Those who are deeply interested in better geography teaching do not, of course, sanction this method. In our normal schools prospective teachers are led to see the value of supplementary material in geography work and are taught to make a wise use of the text. They are generally given practice in altering the material of the text to suit the needs of local conditions and in gathering from it data for the solution of problems.

But a large percentage of the teachers in our elementary schools have not received such training, and those who have, often find them-

[1] This paper was awarded second place in the Prize Essay contest conducted by the American Geographical Society.—Editor.

selves in schools where supplementary material for the geography work is so meager as to discourage any attempt to use it. Thus it is true that the textbook, in a large number of cases, still remains as the only ever present tool with which the teacher must work in presenting her geography lessons. Often the teacher is too busy to give directions to the pupils in the organization of the material contained in the text and the result is assignments of so many pages from the book.

One of the hopeful things is that some of our ablest geographers have gone into the field of textbook writers and much improvement has been made both in the quality and organization of the material. It is probably true that none of the authors of textbooks in geography are satisfied with their product. The great mass of material with which they must deal tends to complicate the problem of presenting it in a book. But certainly much improvement could and should be made in the method of presenting such large and important topics as our great industries. Having in mind the advanced geography of a two-book series, it is the purpose of this article to give a constructive criticism of the present type of textbook presentation of a great industry, with specific reference to the cotton industry. It is assumed that this topic is to be taught in the upper grades of our elementary schools.

The Textbook Should Give Unity to the Industry

The cotton industry should be presented in one portion of the book for the sake of unity. If one attempts to study this industry in our present textbooks, of the type referred to, one finds scraps of information relating to it scattered throughout the book. Often a mere sentence is given in connection with the listing of agricultural products of a region. If the teacher is to give a world view of the industry she must go through the book and select these fragments and organize them. The writers of textbooks for our elementary schools have tended to divide the material bearing upon the industry according to an artificial division of the world into political units. As a matter of fact the pupils in the elementary school should get, by all means, a continuing view of the industry the world over as conditioned by an environmental setting in which are found certain common factors, but where are met different races of people with different habits and different interests engaged in carrying on the industry. Such a study will lead to the understanding of general principles, and will tend to give our young people an abiding and effective interest in the different peoples of the earth and in their problems, relationships, advantages, and disadvantages.

Industries Should Reflect a Geographic Background

Our textbooks do not as yet place enough emphasis upon the reasons for human conditions on the earth. Causal relations should be emphasized more. Textbooks devote too much space to description; too little to interpretation. The study of a great industry such as the one suggested here should be in the main a study of man's relation to his environment. Such a treatment applied to the cotton industry would mean a comparative study of the regions concerned most with the various phases of the industry. In this study emphasis should be placed upon general principles of environmental control to which man is subjected, and which invite people in widely separated portions of the globe to have their share in the world's cotton industry.

The present type of geography textbook fails to point out adequately the extent and manner in which the physical forms and forces of a people's environment rule in the realms of human affairs. The text should have sets of geographical principles for continual reference. There should be sets of principles relating to the various phases of the climate of regions; principles governing the location and growth of cities and of manufacturing districts; principles that govern the character of agriculture and the nature and amount of agricultural crops that may be produced within a region; principles that determine the nature of the soil; principles that govern the location of trade routes and such other sets of principles as are needed for enabling the pupil to get his bearings continually when considering the relation of nature and man.

These principles should be mastered, of course, through use and the text should have exercises which will encourage or lead the pupil to make application of the principles when they are necessary in interpreting human activities. The present type of textbook will probably have many of the principles here suggested but they are too much isolated from the study of human activities. The present arrangement invites the study of these principles as ends in themselves. But the pupils should acquire a generalized knowledge of geographic principles and relationships inductively. They should not be thought of as things to be memorized, into which the content is later to be poured, but the repetition necessary for fixing facts and principles in memory should result from a frequent meeting of such things in the course of the reading and in the solution of problems which the teacher may assign to her classes. Our texts designed for the elementary school still have a long ways to go in their method of presenting such things

as the cotton industry so as to reflect geographic conditions. The good geography teacher of today knows that it is of fundamental importance that she teach the relation of human life and industry to environmental conditions. The text should assist her by differentiating between fundamental geographical knowledge and information which may be useful and valuable but which is not primarily geographical.

The Need of More Illustrative Material in the Text

In geography work the ideal would be to reveal human activities so clearly and with such a sense of reality that one's vision of the distant is like that of one's immediate environment. The reconstruction of that portion of the earth which lies beyond the reach of one's direct observation is to be accomplished by the use of a variety of material. In addition to the readings there should be maps, diagrams, and pictures selected with the idea of giving one experiences as nearly like that of direct participation and observation as is possible. The textbooks should have for continual reference series of special maps showing the relief, rainfall, temperature, soil, distribution of population, transportation routes, and other features that will be needed in the solution of problems that should arise in connection with the study of such a subject as the cotton industry. These maps need not be large and above all they should not be detailed. The important consideration should be that they show clearly the thing they are intended to feature. Such maps should occur in connection with a study of the industry, and attention should be called to them in the presentation of the material. If the teacher wishes, for example, to have her pupils determine why United States can grow more than one half of the world's cotton crop, she should be able to refer to maps of all the important cotton growing countries and determine the area in each that meets the requirements for cotton. She would need maps of United States, India, Egypt, Peru, and other countries where cotton is grown. These maps should show rainfall, temperature, surface, and soil of these regions. It is impossible to find all of these maps for all of these countries in any of our textbooks now in use in the elementary school. However, much improvement has been made along this line and one can, as a rule, find good relief maps of all important countries. Rainfall and temperature maps of the world as a whole and of some of the continents usually appear in some portion of the book. But there is a great need for more clear and attractive maps of smaller areas in connection with the presentation of large topics such as the cotton industry. Writers of geography textbooks would do

well to follow the example of some of our best newspapers and magazines that are to-day making such wide use of maps in connection with their discussions of current national and international questions.

Pictures offer a valuable means for revealing concretely human industries as influenced by environing conditions. The textbook should have as a large ingredient well organized series of pictures. As one studies the cotton industry there should be a visual presentation of it by means of a number of pictures. Most of our modern texts in geography are well illustrated, but more attention should be given to the type of pictures selected. Those needed for the understanding of the reading in the text should be placed along side the reading. In connection with discussion and problem solving there should be much reading of pictures. Of course, it is the duty of the teacher to give the pupils facility in reading pictures through such motivated activities. But the textbook should do what it can to supply the type of pictures that could be used for giving much of the data needed in the solution of problems dealing with the relation of geographic environment and with the various phases of such a topic as the cotton industry.

It certainly would be helpful to many teachers if our textbooks in geography directed the mind of the pupil, reading the material, to a consideration of a picture or series of pictures, to a greater extent than is now commonly done. It would be well for the text, in some cases, to have a list of questions accompanying a picture to call the attention of the pupil to the story the picture has to tell. The text should not aim to present things to be memorized, but rather to present life in various lands to be re-lived by the pupil.

Trade and Exchange Not Sufficiently Emphasized

Our textbooks designed for the geography work in the elementary school should do more with the idea of trade and exchange in the presentation of great industries. The study of geography should reveal concretely and adequately the interdependence of the differentiated and distributed groups of mankind. Textbooks, for example, should say more about the nations that depend upon United States for cotton and the commodities they give in exchange for it. Such a study would tend to show the rights earned by each interdependent group of people by pointing out the services that it renders to all other groups. The important part that our cotton crop plays in the world's commerce should be emphasized by means of concrete reading, maps, and diagrams. Our textbooks at present fail to give material adequate to encourage teachers to develop this important

idea of trade and exchange. Material should be provided for the reconstruction and observation of the social experiences of the world.

The Need for a More Careful Evaluation of Textbook Material

It may be thought impossible for one textbook to present as much material, as has been referred to here, in connection with any one topic. But by confining the presentation to one place in the book and carefully selecting the material it will take no more space than does the total fragmentary treatment so universal in the present type of textbook used in the elementary school.

The *character* of the material rather than the amount should determine whether or not it is to be included. The biggest problem confronting those who are interested in improving the teaching of geography is the selection and organization of material, the great mass and variety of which tends to discourage any attempt to evaluate or discriminate. So long as the authors of textbooks feel that they must present everything then many teachers of geography will feel that they should teach everything. It is certain that much of the material now contained in our geography textbooks could be eliminated because of its non-geographical nature. For example, all detailed industrial processes of a technical nature, which so often take up the pages of our texts, particularly in the presentation of such a topic as the cotton industry, should be eliminated excepting in so far as such processes show adjustment to geographic conditions. A brief allusion may then be made to the process in a discussion of the adjustment to geographic environment.

The Text Should Encourage the Use of the Problem Method in Geography

Effective instruction in any subject demands that leading facts and principles must be made the focus of conscious attention. To this end the selection and disentanglement of primal factors constitute the first step in good teaching. The content of geography especially demands organization, and recitation periods should be largely periods of problem solving.

Only mature and trained minds can carry criteria of judgment essential to profitable reading of geographic literature, and grade teachers, in many instances, lack time and energy necessary to evaluate and organize the material. Textbooks can assist this situation by

presenting much of their material in the solution of carefully selected problems. In this way indefinite rote-work that often characterizes formal text lessons will at least be discouraged and geographical material organized in a way that makes it more interesting and meaningful. For example, much of the material that would be necessary in a textbook in order to present the relation of cotton manufacturing to geographic environment could be given in connection with such problems as: "Why Did Cotton Manufacturing Become an Important Industry in New England?" "Why are the Cotton Manufacturing Centers of the South Mostly in the Carolinas and Georgia?" "Why is Cotton Manufacturing a Leading Industry in the United Kingdom?" and others of a similar nature. It is a hopeful sign to note that our latest textbooks are beginning to do something toward presenting material so as to invite problem solving by the teacher.

CONCLUSION

In the treatment of a great human activity such as the cotton industry our textbooks, designed for the elementary schools, should present the material in one place in the book so as to give unity to the topic. More should be done toward organizing and presenting the subject matter in connection with the solution of vital problems of the type that are met by adult men and women in living the life of a useful citizen. More illustrative material in the way of maps, pictures, and diagrams that relate definitely to various phases of the industry should be introduced, and all material that does not deal fundamentally with the relation of various aspects of the industry to the geographical environment should be omitted.

CHANGES IN THE RUBBER WORLD

W. O. BLANCHARD
University of Wisconsin, Madison

Importance of the Industry

Steel, concrete, and rubber have been named by a prominent captain of industry as the three raw materials most essential in manufacturing. Though all may not agree on this rank, or upon including rubber at all, we must admit that a natural product which has functioned in so many industries and has had such a phenomenal development deserves more than passing interest.

Early Relations of Supply and Demand

Up to the close of the 19th century, the world's consumption of rubber had been small, probably not over 50,000 pounds. This had been supplied from the tropical forests of the Amazon and the Congo, Central America, and Mexico. Brazil furnished the bulk of the production, averaging about 70% of the total. In the closing years of the 19th century, however, and in the first decade of the twentieth, rubber began to find so many new uses, that, to satisfy the demand, more substitutes were used, and more worn-out rubber reclaimed. It has been estimated that since 1880, the United States has used two pounds of reclaimed rubber for every one of new rubber. But even with such reenforcements, the tropical forest failed to meet the demand. As a matter of fact, production was maintained at the old figures only with the greatest difficulty. Crude and wasteful methods were employed to secure a product which nature herself had placed in situations almost inaccessible. The result was a limited output obtained at a great expense of money and life. The strain upon the rubber supply was greatly increased by the rapid development of the automobile industry, resulting, in 1910, in a rubber famine which sent the price to $3.00 a pound. The outlook for a sufficiently large natural rubber supply was anything but promising, and diligent search for substitutes was started and for methods of producing synthetic rubber.

Plantation Rubber

Just at this time, however, the situation was relieved from another quarter. Back in 1873 an Englishman had smuggled 70,000 seeds of

the Brazilian rubber tree to London, where they were propagated and the young trees taken to Ceylon and India, and thence to the Malay Peninsula and the neighboring islands. The cultivated rubber, in small quantities, was just beginning to come on the market from these plantations when the stringency was being felt. As shown by the accompanying graph (Fig. 1), their output reached 1,000 tons in 1907, and 8,200 tons in 1910. With famine prices prevailing, the plantation

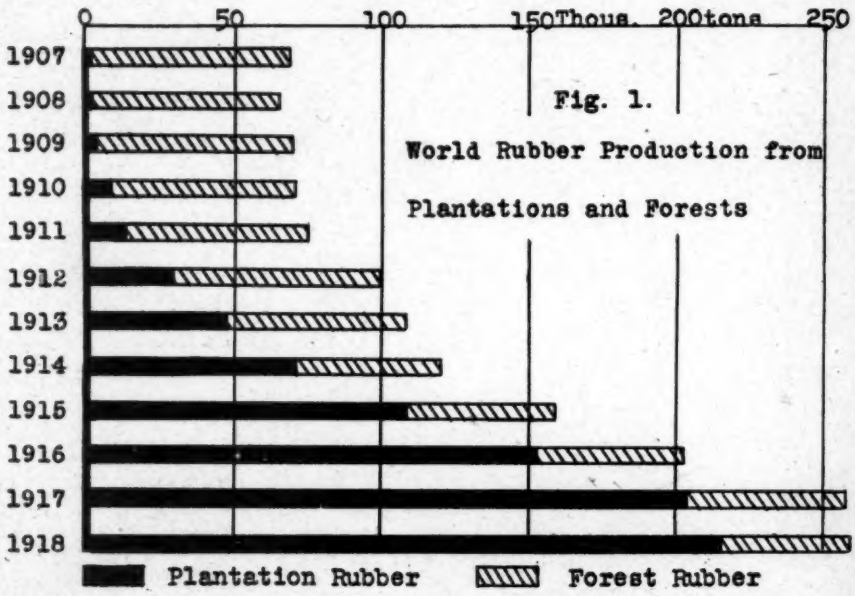


Fig. 1.
World Rubber Production from Plantations and Forests

Data taken from *Foreign Trade Record*, Aug. 4, 1919.

dividends were enormous, some of the companies paying an annual profit equal to their original investment. The situation created great excitement on the London market; numerous rubber companies were organized over night and their stock sold to an eager public. Owing to the newness of the project, however, and the remoteness of the plantations, reputable London financial journals refused to quote rubber stock, believing it to be a second "South Sea Bubble." Naturally, such phenomenal conditions would not be permanent: as more plantations came into bearing, and large quantities of rubber which had been locked up in the new tire industry began to return as reclaimed rubber, prices declined.

In 1918, plantations furnished four-fifths of the world's rubber, and this proportion is constantly increasing. In 1916, the production of tame rubber was four times that of 1912, while during this same

period, the wild rubber output decreased by almost one-third. Unlike many other imported products, crude rubber has steadily declined in price, and the reason is to be found in this great increase in the output

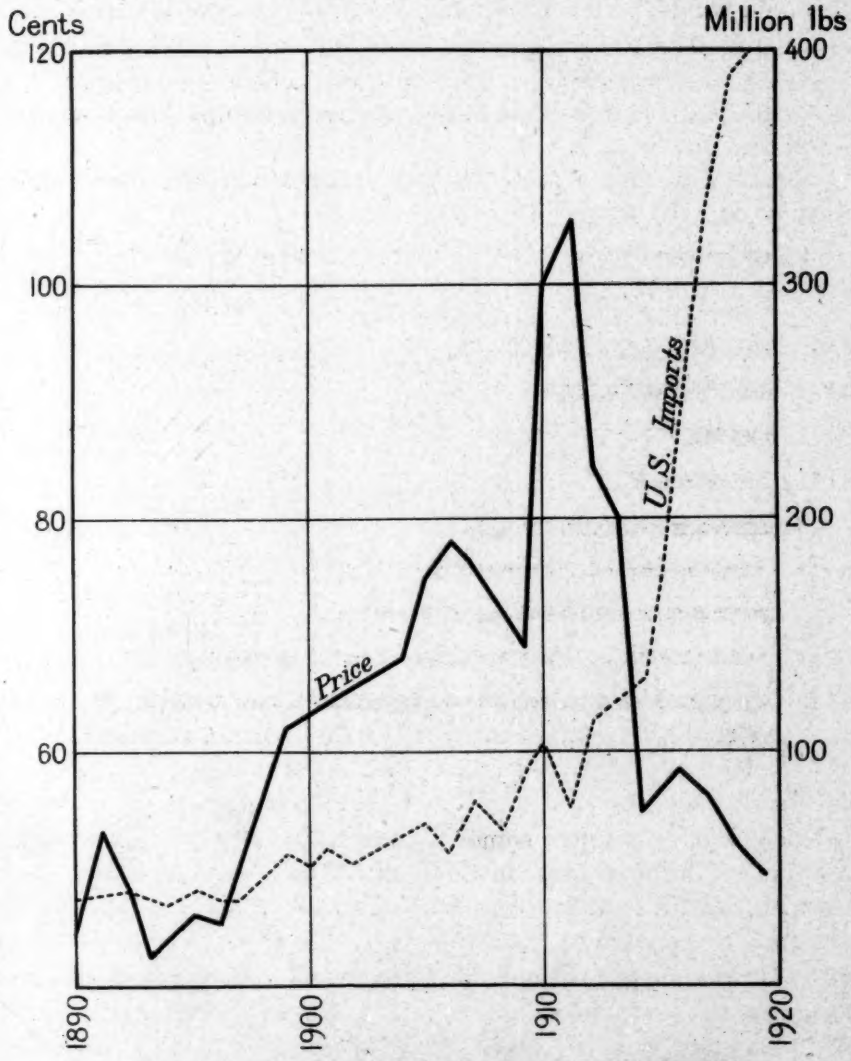


FIG. 2. RUBBER IMPORTS AND PRICES IN THE UNITED STATES

Data taken from *Foreign Trade Record*, Mar. 10, 1917. Prices are those in countries of production of raw rubber.

of cultivated rubber. Even the unusual demands of the war failed to strain the sources of supply.

It was thought possible that synthetic rubber, long the dream of industrial chemistry, would be produced by the German chemists,

when that country was shut off from the natural supply. It is now known, that although they were taxed to the limit to furnish substitutes for rubber, nothing was found that would serve satisfactorily in its stead. As a member of the Mineral Industries Board expressed it, at the time, "German synthetic rubber was just like India rubber, except that it would neither stretch nor shed water."

The plantation rubber thus far produced has practically all come from southeastern Asia and the adjoining islands. Numerous attempts have been made, some of them partially successful, to develop rubber planting in Mexico, Central America, the West Indies, and Hawaii, but these countries lack the all-important cheap labor of the Orient. Interesting experiments are being made in the southwestern part of the United States in raising the guayule, a desert shrub, for rubber, using machinery for planting, cultivating, and harvesting. It is possible that we may witness a repetition of our success in rice-growing, where machinery has enabled the American to compete with the cheap hand labor of the Orient.

The capital invested in plantation rubber is estimated at $300,000,000, and, since it is largely English, London has become the world's rubber market. The planted areas now occupy some 2,000,000 acres, about one-half of which are in the Malay Peninsula, one-fourth in the Dutch East Indies, and the remainder scattered in Ceylon, India, Burma, Cochin China, and Borneo. A few experimental plats are proving very promising in the Philippines. The cost of producing cultivated rubber is estimated from 20 to 25 cents a pound, while that of forest rubber, was, in 1910, about 33 cents on the Amazon. The "crop" depends upon the age of the trees, but is estimated to average 340 pounds to the acre. Of the half dozen varieties of trees experimented with, the Hevea, the principal Brazilian rubber producer, has so far been found most satisfactory. This species yields an abundant flow upon repeated tappings throughout ten months of the year, while other varieties fail to respond after the first few tappings.

The Rubber Industry in the United States

The growth of the rubber industry in this country, greatly accelerated by the advent of the automobile, has been phenomenal. The annual output of tires is valued at $450,000,000—enough to pay our crude rubber bill twice over. Akron, the "tire capital" of the United States, boasts twenty companies: one, the Goodyear Tire and Rubber Company, alone, using one-eighth of the world's supply of

rubber in 1916. We are by far the largest users of crude rubber, absorbing three-fourths of the entire output.

The Outlook

Judging from the record made by the plantations, there need be no fear of a permanent rubber shortage. There is an abundance of land with suitable climate still available. As the planted areas increase, pests and diseases may compel the growers to move to other regions, and to fight for their trees as the fruit-growers have had to do. The prospects in Brazil are not so hopeful. The competition of plantation rubber has forced the passage of protective laws and the use of better methods, but the Indian lacks the intelligence of the coolie, and thus far the plantation companies have had the much more efficient management of the two. The Brazilian government has been greatly concerned over the situation and has spent large sums in making streams navigable for the "hunters," and in offering bonuses for the erection of rubber factories. It has been seriously proposed to import 50,000 coolies, and develop the rubber plantations in Brazil. But whether or not it will succeed in coaxing back the errant industry that has waxed so powerful, remains to be seen.

GEOGRAPHY IN THE SECONDARY SCHOOLS

The years immediately before us are to witness profound changes in this and in other countries. The Great War developed new views of life and revision is everywhere in progress. We have seen that the production of food in larger amounts and particularly by a larger number of persons, is one of our great needs. Accordingly we shall take up with renewed zeal the reclamation of arid and swamp lands. The era of *extensive* agriculture is closing and that of *intensive* tilling of the soil is at hand. Reforestation and forest protection are to receive such attention as we have never before given them. Excellent highways uniting all parts of our domain are to be constructed. Rivers will be deepened and canals dug. Water powers are to be utilized and the loss of soil checked.

The impetus which the war gave to manufacturing, and the tremendous expansion of our merchant marine, will lead to the enlargement of present markets and to the creation of new ones. South America invites our manufactures, and offers us its raw products. The millions of Asia, stirred to new life, beckon our ships to their shores.

As both cause and result of these physical changes there are to be intellectual changes no less striking. Our educational scheme is now undergoing revision. Courses of study are being more fully socialized, to the end that the work of the schools shall be brought into closer and more vital touch with the work of the world. The subjects and the parts of subjects of the greatest value to the greatest number, are to be emphasized.

The war caused us to realize, as we had never before realized, the value of a knowledge of geography. It also revealed to us our national weakness along this line. Additional proof that our knowledge of geography is meagre is almost daily shown by the results of examinations given in normal schools and colleges, and by the conversation of intelligent persons. This unfortunate condition is the inevitable result of the slight attention given to the subject in the secondary school and to unsatisfactory teaching in the elementary school.

The Reports of the United States Commissioner of Education show that about 14 percent of the students enrolled in our public and private secondary schools study physical geography. Those who study any other phase of the subject are so few in numbers that the reports mentioned do not record them.

From these reports we learn that about one half of our high school enrollment study Latin, one half algebra, and approximately 30 per-cent one or more modern language. Students do not, as a rule, pursue these subjects because they desire to pursue them, but rather because the *college* desires it. The full force of this becomes apparent when we consider how few students (relatively) pass from the high school to the college. It is the needs of actual life, not college requirements, that should be the determining factor.

The writer does not wish to suggest that he does not recognize the value of Latin, algebra and modern languages. To a large number of persons they are indispensable. He maintains, however, that as teachers and educators it is our duty to ascertain the *comparative* values of the several subjects. We should clearly distinguish between subjects which are of value to a *comparatively* small number and those which are of value to a much larger number.

We should not forget, however, that the teachers of physical geography are in a measure responsible for the fact that so few students elect the subject. For years it was so technical and so far removed from the affairs of life, that it made little appeal to first-year students.

Secondary school geography is being humanized, and it will be given an important place in the school work of the future. We have come to see that geographic conditions underlie production, transportation, industry, commerce, distribution of population, growth of cities, history. For whatever work the high school student may be preparing, a knowledge of geography will be useful. More than this it will help young people to decide what lines they wish to follow. It should be a fundamental factor in vocational guidance and conservation.

In the opinion of the writer high school students should devote at least one year to the study of geography. The general science, which in many localities has displaced geography, cannot give students that grasp of man's relation to the earth which is the special function of geography.

The first section of the work should be highly humanized physical geography. Temperature, pressure, winds, precipitation, topography, the ocean, are to be studied from the standpoint of their relations to human life rather than as isolated physical phenomena. This results in the maximum of interest and profit.

Following this there should be a study of economic geography. This should emphasize the physical and human factors involved in the distribution, production, and transportation of the most essential

commodities. At the present time we do not give sufficient attention to the geography of agriculture, forestry, the development of water powers, mineral resources and transportation problems.

A study of the regional geography of the United States should next be undertaken. As a part of a course of one year it is impossible to make a very valuable study of the world. If two years' work are to be required of high school students, as many believe should be, then a study of the world would be very profitable.

An adequate preparation for the ordinary occupations and industries of life demands a considerable knowledge of geography. Other nations have outdistanced us in the race for commerce in part because of superior training in geography. In the service of the government, both at home and abroad, there is a wide field for those who have a comprehensive knowledge of the earth and its people. The greatly enlarged responsibility which we have been compelled to assume makes absolutely necessary a knowledge of peoples, places and conditions far in advance of that possessed by the average person in our country today.

JAMES F. CHAMBERLAIN

A LESSON ON BRAZIL[1]

JUNIOR HIGH SCHOOL OR UPPER GRADES

ANNIE L. WELLER
State Normal School, Charleston, Illinois

The Amazon basin is particularly interesting to us in the United States as the source of much of the rubber which is so extensively used today, so a study of this region as a unit may well resolve itself about the topic rubber.

At the same time, however, that the pupils are learning the facts about rubber production they may be directed to have a feeling for the region as real country and for the people who, like themselves, are influenced in their characteristics and ways of living by their physical environment. They may, in imagination, feel the heat or the cooling breeze, hear the sounds of the forest, and see the animals. When they are through they will have a picture of an equatorial region which, with a few modifications, may be transferred to other countries in the equatorial belt.

This lesson presupposes a map study of South America which has brought out latitude and longitude, distances, physical features, distributions of temperatures, winds, and rainfall, and the introduction to the lesson will test the preparation for the lesson made through map study.

A TRIP UP THE AMAZON

1. Introduction:
   - Choice of Route, starting from New York
   - Time of year
   - Types of clothing to take
2. Approach to Para
   - Signs of approach to the mouth of the river
   - Entrance to the river, mouths, islands, width of river
   - Distance up to Para
3. The city of Para—the rubber port
   - The harbor
   - The boats and their cargoes
   - The wharves and their activities
   - The city compared with New York: size, streets, people, activities, buildings, transportation on land

[1] The outlines by Miss Weller and Miss Thralls were submitted in the Prize Essay Contest. Another type of study will be published later.—Editor.

4. Trip up the river to Manaos
    - Distance
    - The boat and its accommodations
    - The river, its size, rate of flow, tributaries, different conditions at other times of the year
    - Sights and sounds
    - The weather—a typical day from sunrise to sunrise
    - Physical response of travelers to the weather
5. The city of Manaos—center for gathering rubber
    - Situation
    - Facilities for rubber collecting and shipping
    - Life of the town
    - Life of the rubber gatherers
        - The forest (characteristics emphasized which influence the methods of the industry)
        - The trails and sap gathering
        - The camp and the preparation of the rubber
        - The relation of the workers to the white man
6. Summary: The possibility of this region being occupied and developed in the near future by the white man

BIBLIOGRAPHICAL REFERENCES

The textbooks in use.
Journal of School Geography. Vol. I, pp. 193–200.
Bull. Pan American Union. Vol. XXXV, pp. 682–698; Vol. XXXVI, pp. 38–47, 174–182, 396–408, 609–610.
Geographical Readers on South America by Bowman, Carpenter, Chamberlain.
H. W. Van Dyke: Through South America, pp. 134–153.

COMMERCIAL GEOGRAPHY IN HIGH SCHOOL

Main problem: Why the Amazon basin has so few railroads. (Suggested by a study of the railroad map of South America.)

Secondary problems:

1. The need for railroads:
    - Need for transportation facilities in general
        - Exports, their sources and amounts
        - Imports, their amounts
    - Natural transportation facilities available
        - Number, size and navigability of rivers
        - Distribution of people relative to rivers as suggested by density of population and distribution of towns
    - Need for rapid transportation as by railroads
        - Kinds of goods to be carried
        - Effect of tropical climate upon the desire to do anything in a hurry
        - Effect of the increasing demand for products, such as rubber, by the white man outside the tropics

2. Conditions standing in the way of railroad building by the white man
   - Amount of rainfall and humidity
   - Altitude and degree of slope of the land
   - Temperatures
   - Rate of growth of vegetation
   - Effect of climate upon materials to be used in railroad building
   - Source and cost of materials to be used; for example, the building of the Madeira-Mamore railroad

Conclusion: The difficulties in railroad building more than overbalance the needs for rapid transportation.

Bibliographical References

Geographical Journal. Vol. XLIX, March, 1917, pp. 169–181.
Geographical Review. Vol. IV, July, 1917, pp. 41–45.
Journal of School Geography. Vol. I, pp. 193–200.
National Geographic Magazine. Vol. III, pp. 3–5, 17.
Bull. Pan American Union. Vol. XXXV, pp. 1116–1141; Vol. XXXVI, pp. 38–47, 174–182, 396–408, 609–610.
Frank G. Carpenter: South America.
H. W. Van Dyke: Through South America.
Salisbury, Barrows, and Tower: Elements of Geography, pp. 160–165.
Brigham and McFarlane: Essentials of Geography.
Bartholomew: Atlas of the World's Commerce.
Bartholomew: A School Economic Atlas.
J. Russell Smith: Commerce and Industry. Chap. XX and Fig. 181.
C. R. Enock: The Tropics. Chap. XXXIX.

THE CATTLE INDUSTRY IN BRAZIL

ZOE A. THRALLS
State Normal School, Indiana, Pa.

A clipping brought by one of the pupils while the class was studying Brazil furnished the motive and the problem for this lesson. The newspaper clipping told of the destruction by fire of the ten million dollar packing and refrigerating plant recently completed by Armour and Co. at Sao Paulo, Brazil. The plant was capable of handling 7,000 beeves a day. The article commented upon the growing importance of the cattle industry in Brazil. As soon as the clipping was read, a storm of questions rose from the class because they had thought of Brazil chiefly as a rubber, cacao, and coffee producing country. The following problem for investigation was formulated:

Problem: "Why did Armour and Co. build such a large packing and refrigerating plant in Brazil?"

"What conditions are necessary for the development of an important cattle industry in a country?"

The following points were suggested by the pupils:

1. Large areas of cheap land
2. Land should be fairly level or rolling but not mountainous
3. A sparse population
4. Sufficient rainfall for grass
5. Mild winters not necessary, but make the industry more profitable
6. Only fair transportation necessary as cattle can be driven to market
7. A market

"How can we learn if Brazil has such conditions?"

A study of the physical, rainfall, and population maps of Brazil was suggested and followed.

"Has Brazil large areas of fairly level or rolling land?" "Where?"

From a study of the map the children decide that Brazil has a large area of land varying from slightly mountainous and rolling to level plains in the plateau region from 5° S. to the southern boundary, and that the area from 12° S. would be most nearly suitable for cattle.

"How will we know if this land is sufficiently cheap for the cattle industry?"

The class suggested that if few people were there, and if it is still uncultivated, the land is probably cheap. The population map was consulted, and they found that, except along the coast and in the coffee region around Sao Paulo and Rio de Janeiro, Brazil is very sparsely populated. Population statistics were also consulted. From their reference books they found that a few years ago land in the Matto Grosso sold as low as 40 cents an acre.

"Has this area sufficient rainfall to provide a growth of grass?"

The rainfall map and the climate discussions in the texts and reference books were consulted. They found that there is a rainy and dry season over most of this region. The rainfall varies from 10 inches to 80 inches and is sufficient to provide a good growth of grasses. They learned also that Brazil is well supplied with a number of luxuriant and nutritious native grasses, and that the government is experimenting to determine the most valuable grasses that should be grown.

"Is the climate suitable for cattle?"

From a study of the maps and texts they found that the climate of all the plateau region and of the southern interior plains is suitable for cattle and for the white race, and that over most of this area, except in the extreme south, the winter season is so mild that cattle can graze all year.

"Where will markets be found for these cattle?"

The children suggested that a home market would be found in the more densely populated sections of Brazil and in foreign lands, mainly in Europe. They found that meat ranks among the eleven chief articles of export from Brazil. In 1915, the meat exports amounted to more than 8,000 tons. Four thousand tons of this went to Great Britain, 2,000 tons to Italy, and 2,000 to the United States. In the first ten months of 1916 Brazil exported 29,000 tons.

"Are the means of transportation sufficiently good so that cattle may be marketed profitably?"

Again the map was consulted and railroads were found leading toward the interior both north and west from Rio de Janeiro and Sao Paulo. The children decided that, by driving the cattle in some cases considerable distances and then using the railroad, the cattle could be taken to market but that the industry would be helped if more railroads were built.

"From where would the meat intended for export be shipped?"

Santos was selected as one of the most accessible ports, because of its connection with Sao Paulo and because of Sao Paulo's better connection with the interior.

"How many cattle has Brazil now?"

"How does this number (30,000,000) compare with the number of cattle in Argentina and in the United States?"

"What kind of cattle has Brazil?" From their readers they found a description of the native cattle, and comments upon their inferior quality for refrigerating purposes.

"What should Brazil do to improve the quality of its beef?" "How can the stock be improved?" "What has been done?"

Summary of the points: Armour and Co. built this packing and refrigerating plant because Brazil is capable of becoming one of the great cattle countries of the world and will be able to help supply the world with meat. We know that this is true because Brazil has a large area of cheap land suitable for cattle, suitable land surface, and a favorable climate. It has a sparse population, hence there is plenty of room and its people will not require all the meat for themselves nor will they need the land for grain. Brazil has a number of good native grasses. Although transportation is not as good as it should be yet it is possible to get the cattle to market. Brazil is beginning to improve the quality of its cattle.

GEOGRAPHICAL PUBLICATIONS

W. W. Atwood. **New Geography.** 304 pp., 598 ills. and many maps. Ginn & Co., Chicago. 1920.

It marks an epoch in educational history when a textbook in geography appears with new content, organization, and method, with a strictly scientific foundation, with a sound pedagogic basis, and with finer maps than have ever before appeared in a textbook in the United States.

Such a book becomes of even greater importance in the educational world when it is written by a man who is at once an eminent geographer and college professor, and a skillful and sympathetic teacher of children. Such a book is the New Geography, and such a writer is its author, Wallace W. Atwood, formerly head of the department of Geography and Geology at Harvard University, now president of Clark University.

The teaching of geography has passed through several distinct phases. Some of us can remember our early struggles when the memorizing of paragraphs of text, and names and locations of pink, yellow, and green areas, black dots, and wiggly black lines was the aim of every teacher and the nightmare of every pupil.

With a dim realization on the part of educators that this was not the most valuable kind of geographic knowledge for the child, and with a dawning conception of his ability as a reasoning being, the pendulum began to swing, and with its movement teachers found themselves struggling with explanations concerning drowned valleys, young, mature, and old rivers, drumlins and eskers, and what not; children, bewildered and aghast, living perhaps on Chesapeake Bay, the banks of the Mississippi River, or in glacier-scoured New England, wondered where such marvels of Nature might be found, all the while blissfully ignorant of the location or of the reasons for the importance of such places as Baltimore, New Orleans, or Fall River.

It is some years now since the pendulum reached the limits of its outward swing from locational to physical geography and the recent tendency has been toward a more human treatment, a linking of the locational and physical in their cause and effect relations with the emphasis laid upon their influence on man and his activities.

The Atwood book illustrates to a marked degree this new spirit, the human idea, in geography. This is shown in the text, the illustrations, and the maps and their arrangement.

Regional geography is the basis of human geography. Man's life has been developed to a large extent by the nature of the region where he dwells. The teaching of regional geography as the basis of human life has been hampered in this country by the fact that no textbook has furnished a full set of regional maps based on strictly scientific lines. Regional treatment has been much more fully developed by European geographers than by those of the United States. Dr. Atwood is the first American geographer to put into the hands of elementary school teachers the necessary series of regional maps. The "natural regions" into which the earth's surface is divided are shown on these maps in a color scheme so simple and effective that the pupils can read the nature of an area at a glance. Inasmuch as these natural divisions largely control the activities and life of man, they form throughout the book the basis for the study of human geography. Not only the natural divisions but other facts of physical geography, climate, drainage, resources, etc., are presented always in their human relations.

In the Atwood geography, map study and map questions, often the deadest of all exercises, are humanized. Maps showing natural regions, climate, vegetation and distribution of people are placed conveniently for comparative study and a series of questions opens up innumerable problems for study and thought. Thus the method of instruction with the open book, instead of the recitation of memorized, lifeless facts, is made possible throughout,

and map study becomes a vital part of every lesson. Political, economic, and commercial maps are all arranged to aid in the study of human geography.

The aeroplane maps of the great cities of the world are an entirely new feature contained in no other textbook. They are as fascinating to the pupil as they are valuable. By means of the aeroplane map of New York, for instance, a child can sail in imagination around Manhattan Island, cross Brooklyn Bridge onto Long Island, and enjoy Coney Island and Rockaway Beach, or sail across the Hudson and visit the group of New Jersey cities so closely connected in their industries and activities with the great metropolis.

Other unique maps give opportunity for the study of the geography of the oceans, of the polar regions, and of history. In both maps and text Dr. Atwood has shown his appreciation of the value of geography in the making of history and has afforded opportunity for the teacher to carry along parallel courses in these closely interwoven subjects.

No less important than the maps are the pictures and diagrams with which the book is profusely illustrated. The author has clearly demonstrated his faith in the pedagogic value of pictures and has provided real lessons under each illustration in the shape of lengthy descriptions, questions, and references.

Think of the value to pupils of a diagram of the Great Lakes with the following legend given beneath:

> This diagram shows the total depth of each of the Great Lakes and the height of its surface above sea level. Study the figure carefully. Which lake has the highest elevation above sea level? Between what two lakes is there the greatest difference in elevation? Which is the deepest lake? the second deepest? Are all the lake bottoms below sea level? What river carries the lake waters to the ocean?

Under a view of the harbor of Trieste is the following legend:

> This is a view in the harbor of Trieste. The city came into the possession of Italy at the end of the World War in 1918 and is one of the most important ports on the Adriatic Sea. Locate Trieste on the map between pages 207 and 210. Compare the east and west shores of the Adriatic Sea. Why has Italy so few Adriatic ports?

The close connection which is made between picture study and map study is shown in the above legend. It is illustrated also, together with the connection with the text, in the following legend which appears under a picture of the port of Barcelona:

> This is a view of the busy water front at Barcelona. At the left is the custom house where the charges on exports and imports are collected. Locate Barcelona on your map. What things do you think the ship in the picture may have brought to Barcelona? What products will it take away?

What a splendid opportunity is afforded to learn of countries, people, and occupations when 600 illustrations are made a direct subject of study by such legends as those cited above.

Not less valuable than other parts of the book is the text itself. It is largely a guide to the visualized geography of the pictures and maps and is interwoven with both. On every page the three are closely linked together by frequent direct references.

The text is not written in the old stereotyped, "cut and dried" form in which all countries and all continents are treated in the same manner by topics arranged always in the same order. Each continent is approached through its most interesting or important feature, Asia through its great size, South America through its wonderful opportunities for trade and development, and Europe through its relations to the people of the United States.

The interesting approach, the new treatment, the varied suggestions for outside work for the pupils will certainly prove refreshing to teachers who, because of the nature of the textbook used, have been obliged to present to older students the same type of classroom work that the pupils have already had in the lower grades.

To those teachers who are struggling with the comparatively new method of "problem teaching," the book will prove of inestimable value in its endless suggestions of problems

large and small. The following sample cannot fail to suggest many others to teachers and pupils:

> A PROBLEM. *Use map opposite page* 82. Suppose we think of a high plateau country in the temperate zone nearly surrounded by mountains. Suppose there are canyons more than a mile deep in the plateau, and mountain ranges rising from 2,000 to 5,000 feet above its general level. The region has a very dry climate with less than 10 inches of rainfall annually over the greater part, but with from 10 to 20 inches in certain portions. What would primitive peoples do for a living in such a region? Where would they make their settlements? Would civilized people want to live there? What occupations would they find profitable? Where would they build their homes? What would they do for water? This is a large geographic problem and it is a real problem for the people who are trying to make a living in the great plateau region of our Western states.

The book closes with a splendid treatment of the United States as a World Power. Our resources, our industries, our commerce and foreign relations, and our great responsibilities due to our wealth and power are all described in a way which will incite every pupil with the desire to become not only a better citizen of the United States but a more worthy world citizen also. The closing paragraph might be read with profit not only by the pupils in our schools, but by the statesmen in our capital cities, our representatives in Congress, and our industrial workers and planners.

> We now have a great responsibility, with other nations—to help maintain peace and freedom in the world. To meet these responsibilities we must maintain order and prosperity in this country. We must conserve the great natural resources and work together in the friendliest spirit to produce food and the raw materials used in the making of clothing and in the building of houses. We must, however, do much more than merely support life; we must aim to promote the higher and better education of all people, to promote the fine arts of music, painting, and sculpture, and in every way possible to make the social conditions in the community where we live, and in the whole world, more pleasant.

NELLIE B. ALLEN

ALBERT P. BRIGHAM. **Cape Cod and the Old Colony.** 284 pp., 33 ills., 2 maps. G. P. Putnam's Sons, New York. 1920. $3.50.

The book describes a region old in our history, about which much has been written, but with which few Americans of today are acquainted. The influences of land, sea, and wind, upon the history of the region is brought out with a vividness that commands attention. A keen sympathetic strain expressed in that fine literary style of which Dr. Brigham is master, pervades the entire book. One cannot read without acquiring a sympathetic interest and desire to know more of, and understand better, this old section of our country; the people who now live there and the ones who have made it famous in the past. The response of the people to the natural environment of the region is woven into the fabric of the narrative in a most engaging manner. This is done in simple non-technical terms and in such a style that the layman may read and understand. The description is so clear and so entertaining that one may fairly picture the region as he reads. The story of the glacier and of the never ceasing activities of the winds and waters in building and moulding the Cape is told in a most entrancing manner, blending constantly in it the story of the life of the region.

The change from the old days to the new as other portions of our country developed and came into competition; as manufacturing and other industries grew on the mainland to the west bringing their multitudes of people, and as wealth and the summer tourist came, is

set forth in a style which makes clear the re-adaptation of the people to changed conditions. This change led to a more intelligent adjustment of the natural resources to an intensive type of agriculture and to other human activities better adapted to local environment. This change, with the sympathetic description of it, is best expressed in the words of the author: "The Cape is not like this today. That was the old Cape that Timothy Dwight described more than a hundred years ago, the Cape that Thoreau saw in his fugitive visits of sixty-five and seventy years ago. There was no railway, no wire, no steam service across the Bay—only sand roads and isolation.

Today, the man of the Cape goes by the Old Colony railroad, though he no longer so names it, and its trains are slow enough not wholly to destroy the repose of old time. There are roads of macadam and tar and thousands of motor cars, summer hotels, shore cottages, refrigerating plants, silted harbors, fishing specialized and localized, overseas trade long dead, wheat and flour and steaks and fuel from the continent lying behind, restricted and specialized agriculture, the artist colony and the Portugee—such the Cape. But the sea is there, the surf, the dunes of the shore, the winter gales, the kaleidoscope colors, the sunrise from Spain, and in no small measure, left over for the fourth Pilgrim century, the simple life, the frugality, kindness and honor of the first generation, whose descendants in the eighth, ninth and tenth removes, have passed on and paused in New York, the Mississippi Valley and the Pacific West."

The book is divided into nine chapters titled as follows: "The Pilgrims Around the Bay"; "The Origin of the Cape"; "The Changing Shoreline"; "Old Colony Names and Towns"; "On the Land"; "The Harvest of the Waters"; "Roads and Waterways"; "Three Centuries of Population"; "The Environment of the Sea." Dr. Brigham has made a real contribution to popular literature concerning one of the historical sections of America and about which all American citizens should become more enlightened.

Julean Arnold. **Commercial Handbook of China.** Vol. I, 629 pp., 51 ills., 2 maps; Vol. II, 470 pp., 21 ills., 1 map. U. S. Dept. of Commerce. Gov. Printing Office, 1920. Vol. I, 60 cents. Vol. II, 40 cents.

These volumes contain a great amount of information very valuable to the teacher.

H. A. Johnson and Ina Lockwood. **Problem Geography of Asia.** 36 pp. Pub. by the authors, Rochester, Minn. 35 cents.

This is an outline for teaching the geography of Asia by the problem method. Other outlines are in preparation.

Nellie B. Allen. **The New Europe.** 435 pp., 177 ills., 7 maps. Ginn & Co., Chicago, 1920.

This is the last book in the series of industrial geography texts by Miss Allen and is of the same high quality as the others. It treats the new countries of Europe thus bringing the subject down to date.

Helen G. Thomas. **The New Geography.** *Ed. Rev.* March, 1920, p. 236.

Roderick Peattie. **The New Geography.** *Ed. Rev.* Dec., 1919, p. 420.

William A. Reid. **Argentine Activities.** *Bull. Pan. Am. Union.* Aug., 1920, p. 130.

W. C. Wells. **The Economic Value of United States Imports from Latin America.** *Bull. Pan. Am. Union.* Aug., 1920, p. 151.

Sih-gung Cheng. **Modern China.** Oxford University Press. 1919, 318 pp.

W. M. McGovern. **Modern Japan: Its Political, Military and Industrial Organization.** Chas. Scribner's Sons, New York, 1920, 280 pp.

Chong Su See. **The Foreign Trade of China.** China Society of America, New York, 1919, 451 pp.

John Foord. **The Island of Yap.** *Asia.* July, 1920, p. 621.

To Members of the

NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The JOURNAL OF GEOGRAPHY is now yours. Its usefulness depends, in large measure, upon you. Its mission like that of the National Council is to

Increase the Efficiency of Geography Teaching

This mission can be accomplished by increasing the membership, and enlarging thereby the number receiving the message carried by the *Journal.* The campaign is now on and its success depends on YOU. EVERY SCHOOL IN AMERICA SHOULD RECEIVE THE JOURNAL.

WILL YOU HELP?
SECURE FIVE NEW MEMBERS

Fill out the form below and send it to the *Business Manager.* Write other names on a separate sheet. Make the list a long one. Watch us grow.

To the Business Manager

THE JOURNAL OF GEOGRAPHY,
2249 Calumet Avenue,
Chicago, Illinois.

I desire to have my name recorded as a member of the NATIONAL COUNCIL OF GEOGRAPHY TEACHERS. I enclose $1.50 for the annual dues. This entitles me among other privileges to the year's subscription to the JOURNAL OF GEOGRAPHY.

Name.....

Address.....